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TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

MEMORANDUM

TO: Stephen D. Jarvela, Chief
Eastern Response and Preparedness Section, EPA Region III

THRU: Mike Zickler, TATL, Region III MZ TDD #8812-08

FROM: S. Andrew Sochanski, TAT Region III JS/SAS PCS #2312

SUBJECT: Preliminary Assessment Survey
Berks Landfill, Spring Township,
Berks County, Pennsylvania

DATE: April 7, 1989

Introduction

The Roy F. Weston Technical Assistance Team (TAT) has been assigned by Senior OSC Stephen D. Jarvela to perform preliminary assessments of sites listed on the National Priority List (NPL) and non-NPL sites within EPA Region III. TAT member Sochanski assessed the site in conjunction with review of current site files and numerous contacts.

Location

The Berks Landfill is located in Sinking Spring, Spring Township, Berks County, Pennsylvania. The landfill is situated approximately seven miles southwest of the City of Reading, PA. The Berks Landfill is south of an unnamed tributary of Cacoosing Creek, which flows in a westerly direction. Woods surround the east, south and western sides of the landfill. (See site sketch).

Background

Berks Landfill is situated in an area where iron ore deposits were mined from the mid-nineteenth to the early twentieth century in a series of discontinuous open pit strip surface mines and deep shaft mines. These are known collectively as the Wheatfield Mines.

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According to the confidential enforcement Potential Responsible Party Search prepared by EPA Region III dated June 15, 1987, the land known as the Berks Landfill was purchased by Mr. and Mrs. Sebastian Lombardo in the 1950's. Operations began in 1963 when the Berks Landfill Corporation began receiving municipal refuse in the "old landfill" which is approximately ten acres in size. Landfill operations continued and the landfill size was extended to include a larger forty eight acre eastern section. The Pennsylvania Department of Environmental Resources (PA DER) granted the Berks Landfill Corporation a National Pollutant Discharge Elimination System (NPDES) permit to discharge leachate from its solid waste operation into the unnamed tributary of Cacoosing Creek. The leachate was collected into four surface impoundments. In 1979, PA DER issued a violation for non-compliance of the water quality standards and the discharging practices were halted.

Landfill operations continued and it has been reported that from 1979 to 1980, the landfill received approximately five thousand cubic yards of alkali sludges. These sludges were buried in the "old" western ten acre section of the landfill. Reports state these alkali sludges were stabilized (mixed with cement) before they were buried. The Sabatrol Corporation was approved by PA DER to stabilize the sludges, but on March 21, 1980 this approval was suspended.

In January 1984, the Berks Landfill was purchased by Mr. Robert C. DeMeno. Berks Landfill Corporation's name was changed to the Berks Sanitary Landfill Inc., and it continued to receive municipal refuse.

PA DER conducted onsite sampling of the monitoring wells located around the landfill in 1984. Four sets of monitoring wells were drilled from 1974 through 1986. In July 1985, sampling detected volatile organic compounds in the monitoring wells onsite. PA DER continued sampling until mid-1986. As a result of the volatile organic compounds found in the onsite monitoring wells, NUS (Fit III) performed a site inspection and sampling on September 25, 1985.

In August 1986, a Consent Order and Agreement between the Berks Landfill Corporation and the Berks Sanitary Landfill Inc. was signed with PA DER. Site operations were temporarily halted because leachate was detected in the onsite monitoring wells. A work plan was developed which consisted of a groundwater study and a remedial investigation. This report was prepared by Peffer Geotechnical Corporation. It details the groundwater conditions and it also details the sampling results of the monitoring wells, the leachate and residential wells in the area.

On October 1, 1986, the landfill was closed. The Groundwater Study and Remedial Investigation continued onsite and was submitted to PA DER for approval in 1987. On July 22, 1988, the EPA Emergency Response Section, (OSC Charles Dispoto) and TAT Region III performed an emergency assessment of the site. (See attached Berks County Landfill POLREP #1.) PA DER was concerned with one of the four onsite impoundments which appeared to be close to overflowing into the unnamed tributary of Cacoosing Creek. TAT sampled the impoundments and calculated the capacity of the four impoundments to be approximately 2.6 million gallons. This capacity would be retained in the impoundments before they would overflow.

Materials and Associated Hazards

According to reports during the time when Mr. Sebastian Lombardo operated the landfill, it received approximately 5,000 cubic yards of alkali sludges from 1979 to 1980. During this time, the old 10 acre section of the landfill was operated by Sabatrol Corporation. The sludge waste was received from Carpenter Technology Corporation of Reading, PA.

Sampling of the leachate showed various organic compounds. (see volatiles detected in the leachate). Trichloroethene ranged from 0 to 75 ppb, toluene from 56 to 1200 ppb, methylene chloride ranged from 20 to 3800 ppb.

The most recent analytical data reveals the following organic compounds in the monitor wells and core borings. Results are listed in ppb and the results are tabulated from the Peffer Groundwater and Remedial Investigation report dated February 1987. The holding times for the volatile organic analysis (VOA) was six to thirteen days. The normal holding time for VOA analysis is seven days unless the samples have been preserved. No notation has been made that these samples were preserved. (See Berks Landfill Disposal Diagram.)

All sample results are listed in ppb / ND - compound not detected

Monitor Wells	vinyl chloride	chloroethane	trichloroethene	
MP-18 Shallow	542	16	204	
	toluene	Benzene	Acetone	2-butanone
MP-16 Shallow	166	24	2030	3360

	toluene	vinyl chloride	methylene chloride	2-butanone
Leachate	374	64	689	1074

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Shallow Monitor Wells	toluene	vinyl chloride	trans-1,2-dichloroethene	trichloroethene
C-3 shallow	ND	44	126	1.3
C-3 deep	ND	31	180	1.0
C-4 shallow	ND	26	379	316

Samples from the residential wells were collected on January 26, 1987. Only three residential wells revealed trichloroethene and the OSWER removal action level is 130 ppb. The holding times for this analysis was two days and the results are listed in ppb.

	Trichloroethene	Bromodichloromethane
Roberts Well	1.2	ND
Faust Well	1.0	ND
Bechtold Well	1.0	ND
[illegible]nbardo Well	ND	1.2

[illegible]e results of the TAT onsite sampling is tabulated below. Samples were collected on July 27, 1987. No pesticides, polychlorinated biphenyl (PCBs) or metals were detected in any of the samples.

Sample No.1 North Road End of Lagoon 4 ND

Sample No.2 South end of Lagoon 4 Di-n-Octyl Phthalate 36 ppb

Leachate Collection System Sample Results (in ppb)

vinyl chloride	69
1,1 Dichloroethane	100
2 butanone	240
trichloroethane	40
2 Hexane	89
Toluene	700
Ethylbenzene	130
Total Xylenes	370

	Sampling Locations			
	Lagoon 1 North End	Lagoon 1 South End	Lagoon 2	Lagoon 3
vinyl chloride	12	6	5	5
1,1 Dichloroethane	7	ND	ND	ND
2 Butanone	140	100	87	14
2 Hexanone	12	ND	7	ND
Toluene	62	40	33	ND
Ethylbenzene	12	8	ND	ND
Total Xylenes	48	32	19	ND
Di-n-Octyl Phthalate	27	65	ND	ND

Landfill Drainage		Lagoon 5
2-Butanone	27	ND
Total Xylenes	7	ND

All results are listed in ppb. (ND) - compound was not detected.

e extent of groundwater contamination at the landfill is controlled by a carbonate aquifer in the valley to the north of the site. The carbonate aquifer is exposed in the bottom of the valley and the stream acts as a recharge source for groundwater. The residential well of James Lombardo is the only private well in the landfill area which taps the carbonate aquifer. It is approximately twenty (20) feet deep. In contrast, the other private wells, including the Roberts and Bechtold wells, were drilled into the low permeability diabase aquifer. There appears to be no connection between the carbonate and diabase aquifers.

The Berks Landfill Site is surrounded by a thick diabase intrusion which appears to isolate the site hydrologically from the surrounding wells. To the north of the site, the Citizens Utilities Water Company has four wells which are within one mile of the site. No documentation of contamination has been detected in any of these wells.

Current Site Status

An emergency assessment was performed by the Environmental Protection Agency (EPA) Region III and TAT in July 1988. Sampling revealed no significant organic contaminants or metals in the surface impoundments or lagoons.

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PA DER took emergency action to control the overflow conditions of lagoon #1 in August 1988. Waste water leachate contained in the lagoons was pumped and transported to the water treatment plant. According to Tim Sheehan (PA DER), a temporary pumping station pumped thirty thousand (30,000) gallons per day of waste water into a manhole which is connected to the Spring Township Water Treatment Plant. PA DER is continuing to sample the discharge weekly. The proposal for the permanent construction and connection of a pumping station to the sewer system had been sent to the PA DER Harrisburg Office by Tim Sheehan (PA DER) on January 18, 1989. The proposed agreement is between the Sinking Spring Water Authority and the Spring Township Water Treatment Plant and has not been approved by the state. This agreement would be for five (5) years to allow the treatment of the waste water from the lagoons which collect the leachate. Weekly sampling has not shown any significant contamination, although Tim Sheehan (PA DER) stated the water treatment plant has detected elevated metals at their discharge location. There is no documentation of the source of these elevated levels of metals. Mr. Sheehan expressed concerns that the state bond money for this project would only last for two and one half (2 1/2) years after initial construction.

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In general, groundwater is less contaminated in the deep diabase aquifer than compared to the carbonate aquifer. The deep monitor wells to the north are completed in the carbonate aquifer and had little contamination compared to the shallow carbonate aquifer monitor wells.

Bedrock is exposed at the site as a result of past excavation and strip mining operations. The first formation encountered is the Hammer Creek sandstone formation which overlays a thick limestone pebble conglomerate. Below is the Martinsburg (phyllite and quartzite) followed by a limestone unit. The diabase unit in the area is the lowest basement rock. All the formations are separated by erosional zones or unconformities. The limestone pebble conglomerate that outcrops in the valley bottom of the unnamed tributary is a point of recharge for the limestone pebble conglomerate aquifer. This condition results in groundwater discharging into the lagoons or surface impoundments which causes the lagoons to fill up more quickly and at the same time decreases the concentration of contaminants in leachate.

The isocon plots (see maps from Peffer Geotechnical GW/RI Report) are indicators of contaminants based on the eleven shallow rock bores designated as "C". Electrical conductivity shows two (2) plumes with high dissolved solids. The chloride isocon map was used to define the leachate plumes, and the chloroethene isocon map was used to map trichloroethene, 1,2 Dichloroethene and vinyl

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chloride (chloroethene). The plumes are all similar in shape and show contamination to be onsite. Both the plumes appear to be moving in a southerly direction away from the unnamed tributary of Cacoosing Creek. Data was accumulated during pump tests in January and February 1987 by Peffer Geotechnical Corporation.

No significant contamination of any residential wells in the area has been determined to date. All analytical results could not be QA/QC'd during this assessment, although results of TAT sampling in July 1988 had been reviewed previously.

According to Tim Sheehan of PA DER, the site poses a direct contact threat with the potential discharge of leachate waste water (in the lagoons) discharging into the unnamed tributary of Cacoosing Creek. He is also concerned about the approval for the construction and permanent connection to the storm sewer. Dave Byro of EPA Enforcement stated the PRP search will continue to be updated to determine the quantities and other wastes disposed at the landfill. No enforcement letters to the PRPs have been sent.

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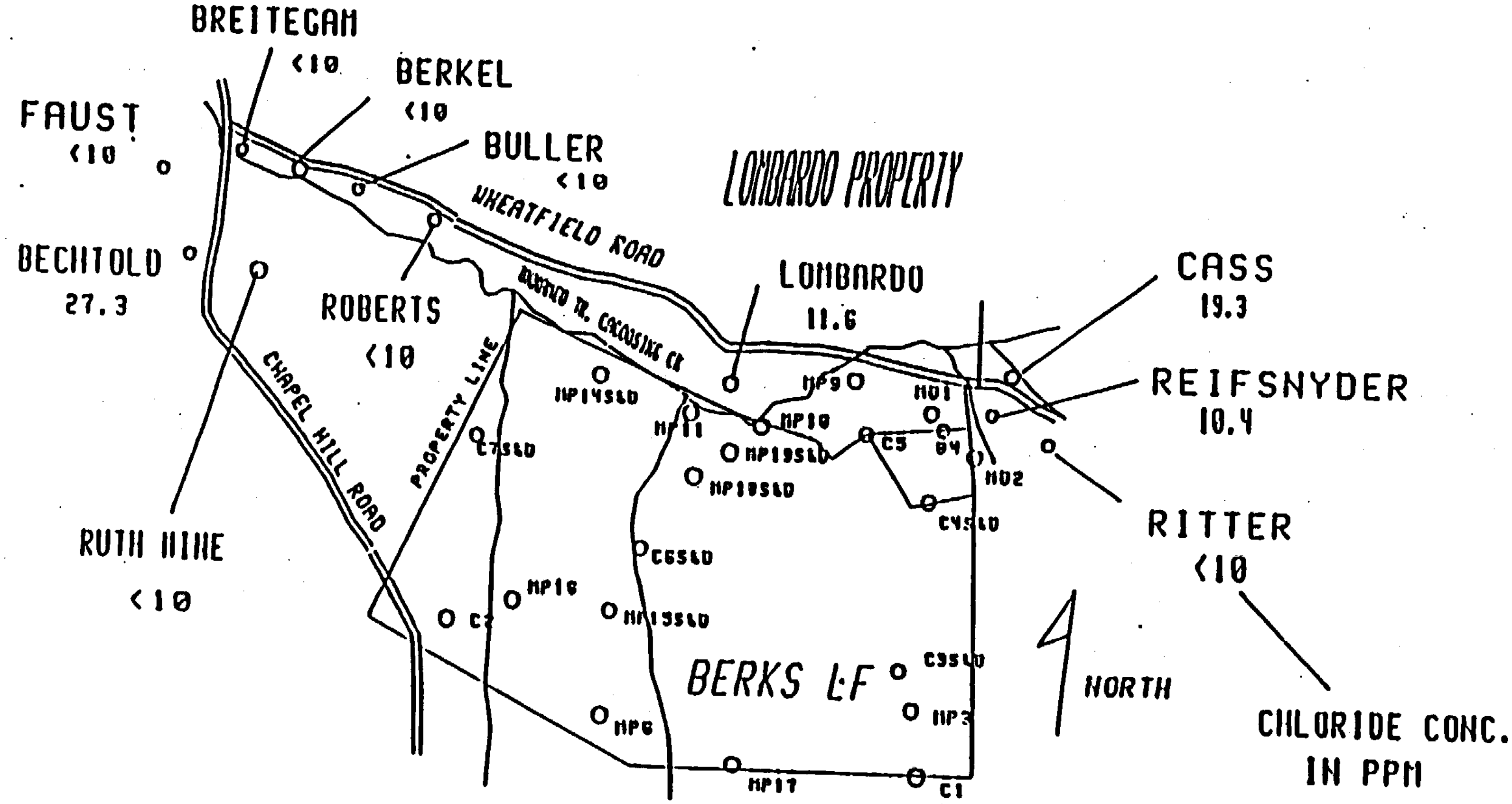
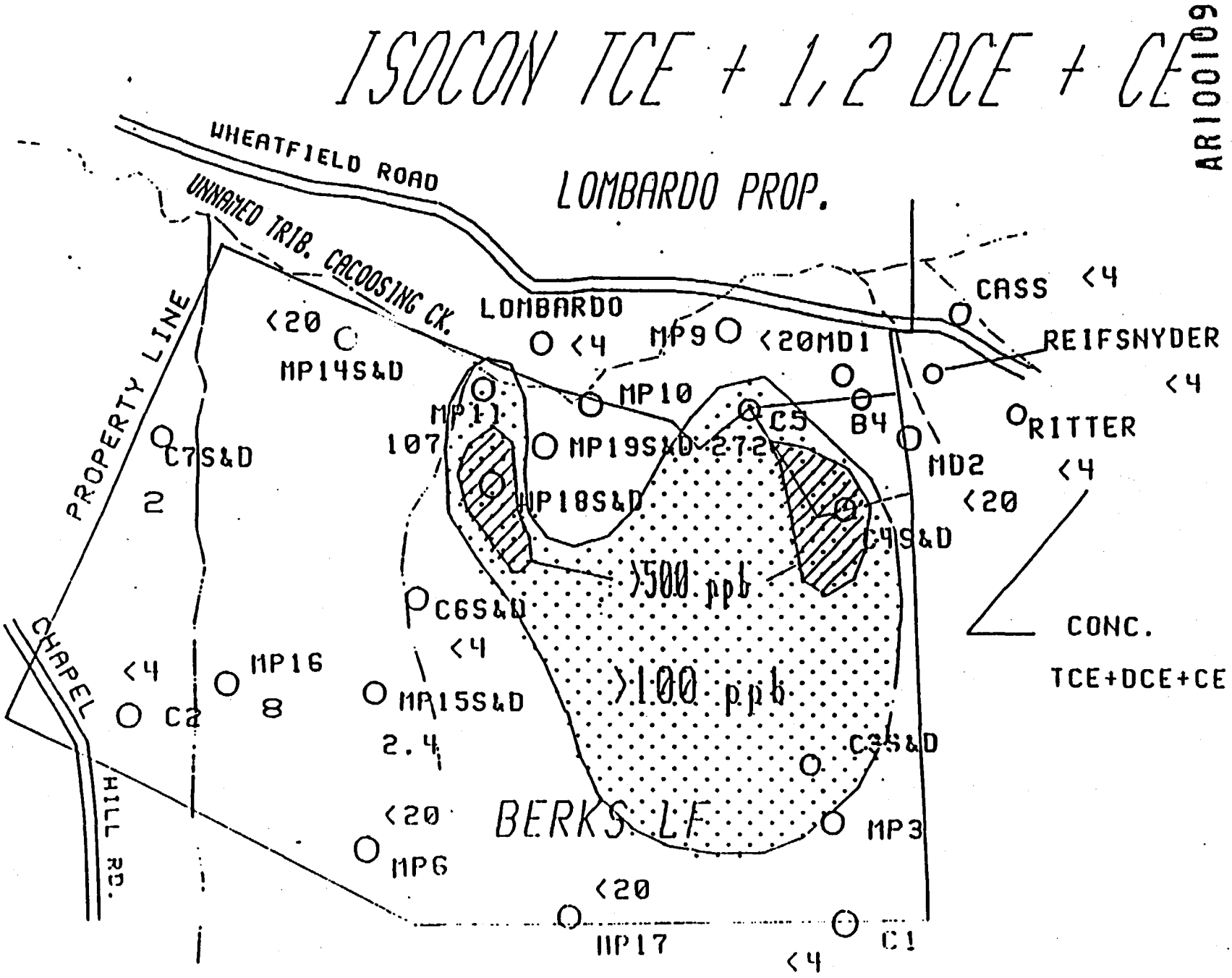


CHLORIDE CONCENTRATION - PRIVATE WELLS
BERKS LF

Pefier Geotechnical GW/RI Report, 1987

FIG. 4 4.4.2

SINKING RING, BERKS CO., PA



Peffer Geotechnical GW/RI Report, 1987

BERKS LANDFILL
SINKING SPRING, BERKS CO., PA

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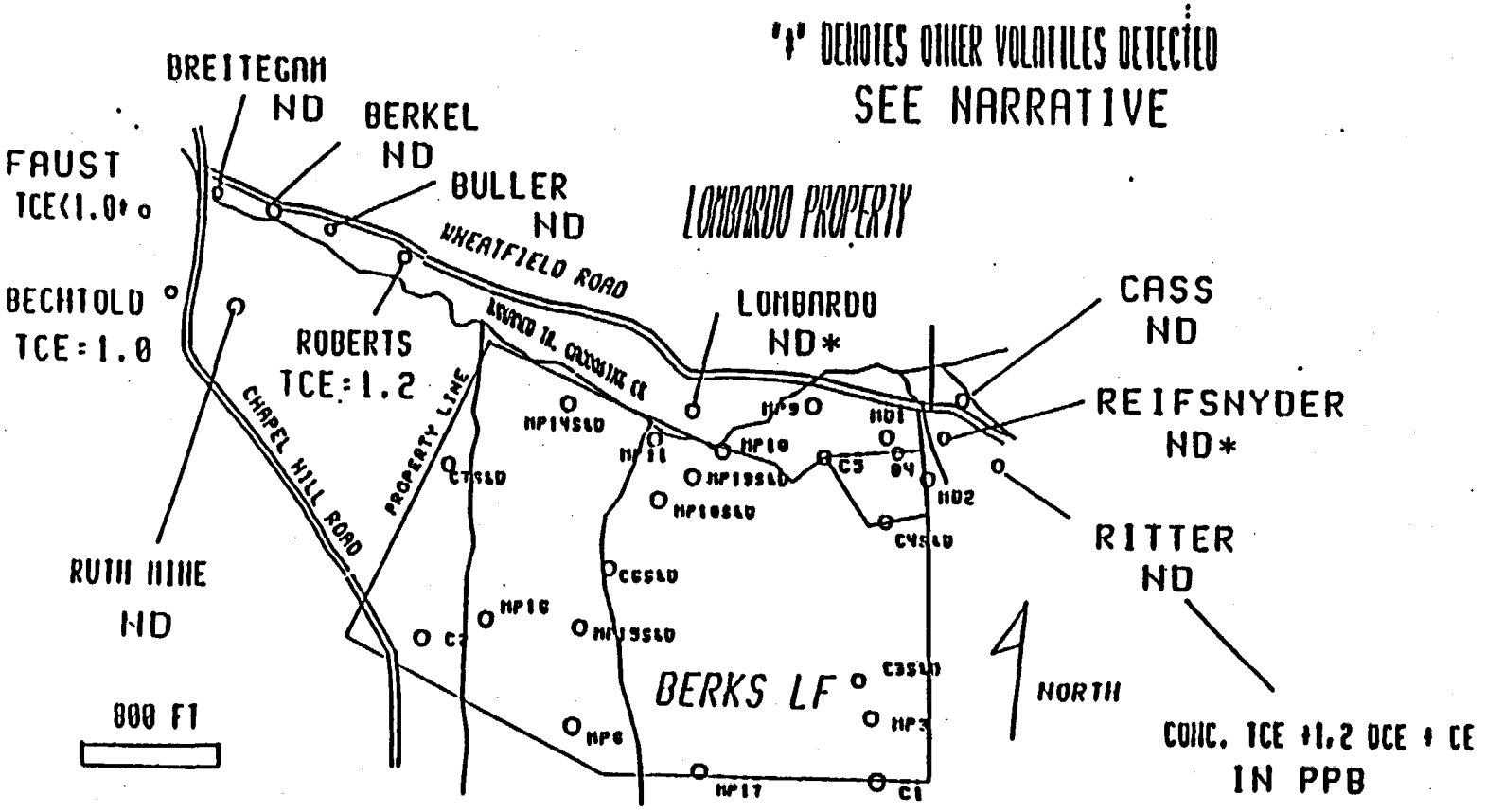


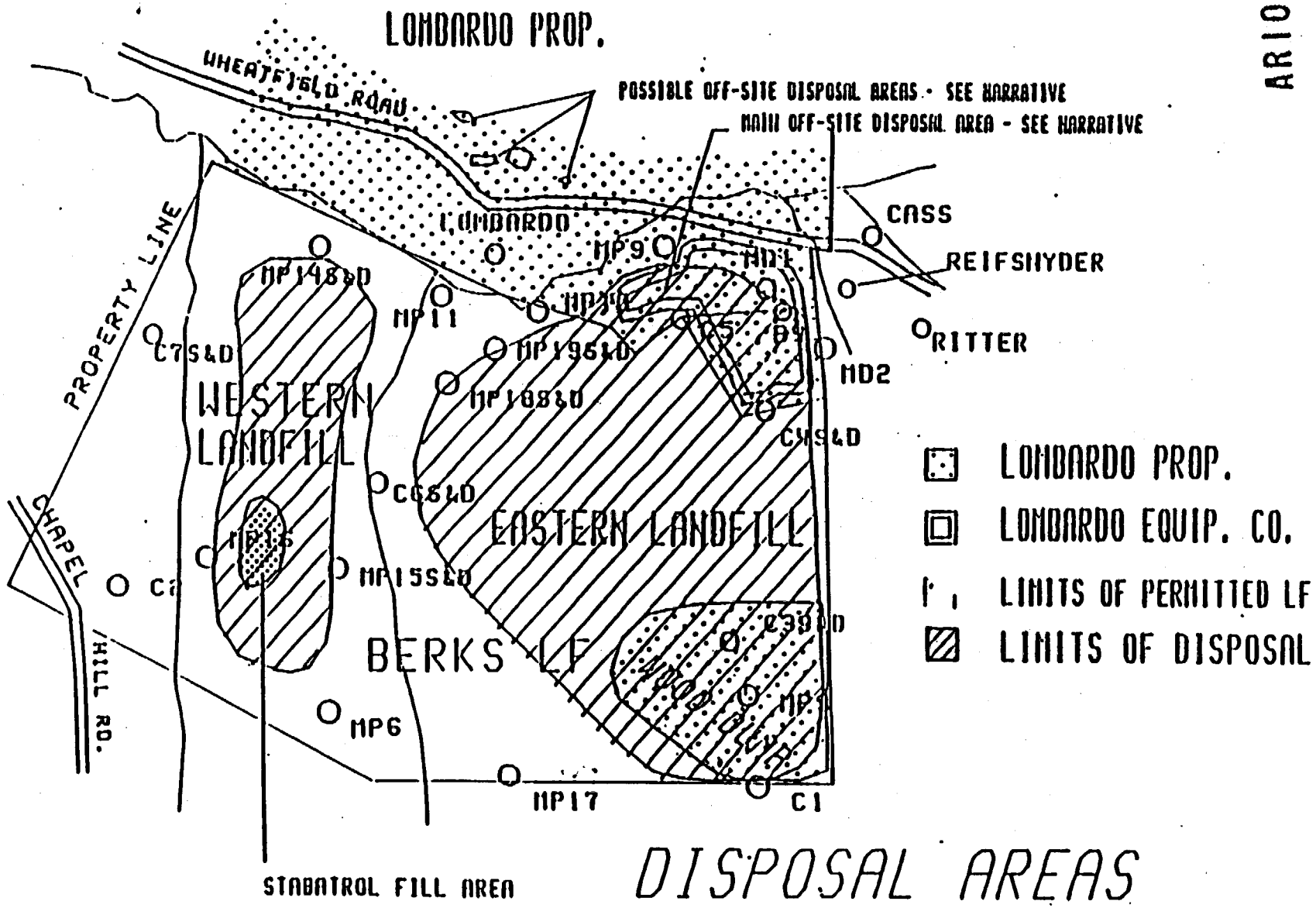
PRIVATE WELLS - CHLOROETHENES : TCE + 1,2 DCE + CE

BERKS LF

FIG. 4.4.4.4

Peffer Geotechnical GW/RI Report, 1987

BERKS LANDFILL
SINKING SPRING, BERKS CO., PA

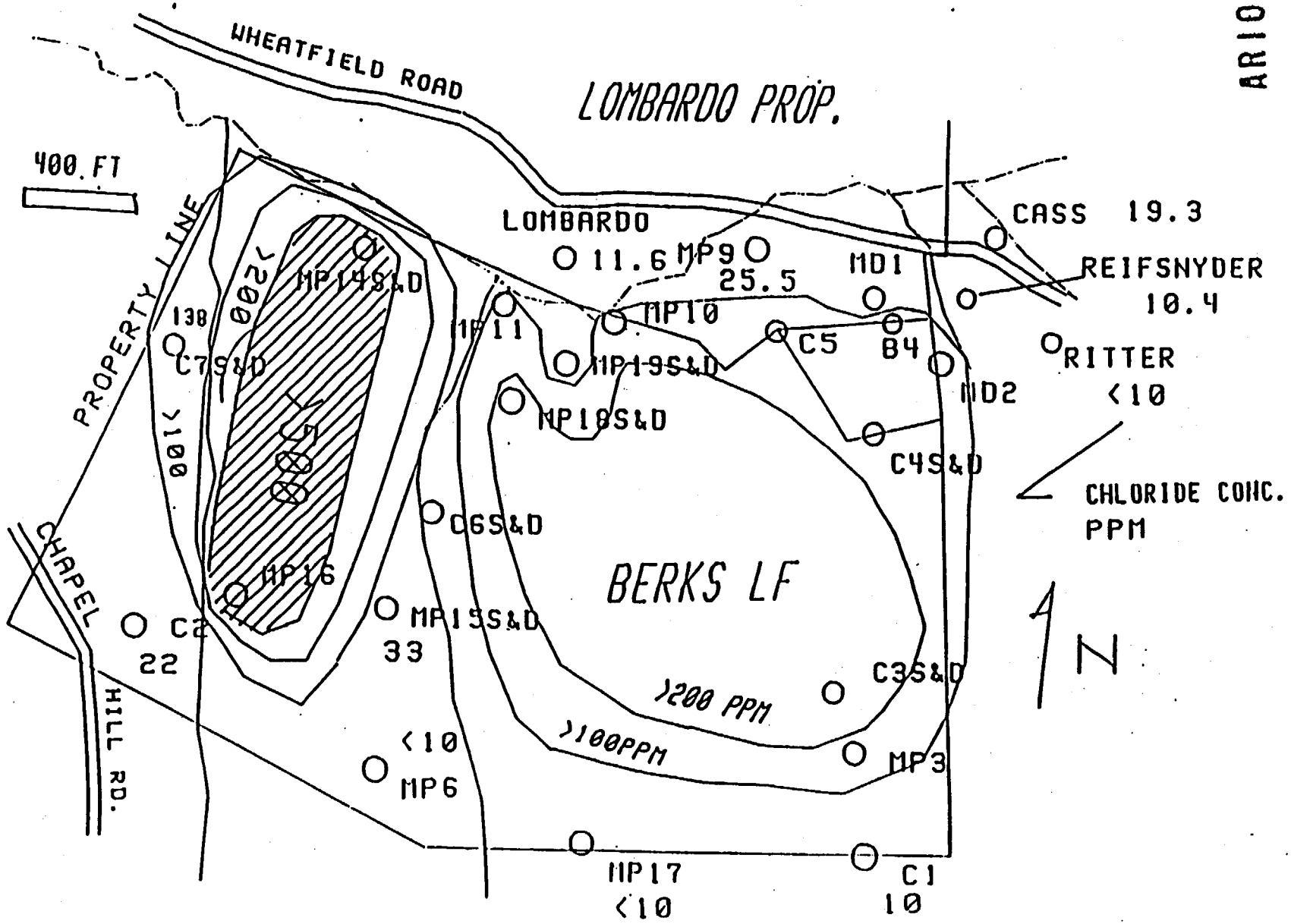


DISPOSAL AREAS

Peffer Geotechnical GW/RI Report, 1987

BERKS LANDFILL
SINKING SPRING, BERKS CO., PA

ISOCON CHLORIDE



Pfeiffer Geotechnical GW/RI Report, 1987

FIG. 4.4.3.2